

REMARKS

Amendments to the Claims

Claims 1 to 6 and 30 to 45 are in the application. Claims 1, 5 and 40 are presently amended.

Claim Rejections - 35 U.S.C. 112

The Examiner rejected claims 1 to 6, 30 to 35 and 40 to 45 under 35 U.S.C. 112 as being unclear for failing to particularly point out and distinctly claim the subject matter for which protection is sought, and for being incomplete for omitting essential steps. In particular, the Examiner alleged that “the claim is incomplete for omitting essential steps, such omission amounting to a gap between the steps...[t]he omitted steps are those needed to provide the above-mentioned attachment of the binding cavity to the substrate”. In response, Applicant has amended claims 1 and 40 to recite an additional step of “selecting an appropriate solid substrate or functional group for facilitating attachment of the binding cavity on the solid support stamp to the solid substrate”. This amendment corresponds to step (d) in claim 1 and step (a) in claim 40. Support for this amendment is found, for example, in Figure 4 and associated text. In light of this amendment, Applicant respectfully requests withdrawal of this rejection.

The Examiner rejected claim 5 because “the “attachment” lacks antecedent basis. It is unclear whether it refers to step (a) or step (d) of claim 1”. In response, Applicant has amended claim 5 to recite “...to facilitate the attachment in step (a)”. Applicant respectfully submits that the person of ordinary skill in the art would readily understand what is intended by the contemplated modification of the silicon wafer solid support for facilitating the attachment of functional groups thereto. In view of this amendment, the Examiner’s rejection is rendered moot.

Claim Rejections - 35 U.S.C. 103(a)

The Examiner rejected claims 1 to 5 and 30 to 45 under 35 U.S.C. 103(a) as being unpatentable over Yilmaz et al. (U.S. 20040157209) in view of Whitesides et al. (Annual Review of Biomedical Engineering (2001) 3:335-73). In view of the claim amendments outlined above, the Examiner’s objection is rendered moot. As presently amended, claim 1 now recites an additional step of selecting an appropriate solid substrate or functional group for facilitating attachment of the binding cavity on the solid support stamp to the solid substrate.

As the Examiner pointed out and as mentioned in Applicant’s letter of February 14, 2007, Yilmaz does not specifically disclose the step of applying the obtained stamp to the

surface of a solid substrate. Yilmaz neither teaches nor suggests that the contemplated molecularly imprinted polymers can be supported to a substrate.

Applicant reiterates that neither Yilmaz nor Whitesides teaches or suggests the transfer of the binding cavity from the stamp (on the surface of which the binding cavity is formed) to a solid surface. Whitesides describes the formation of patterns of self-assembled monolayers on solid surfaces by forming a topography in a stamp, adsorbing a self-assembled monolayer on the stamp, then applying the stamp to a solid substrate, with the protruding surfaces of the stamp touching the solid surface and the recessed surfaces of the stamp not touching the solid surfaces (see Figs. 1 and 2 of Whitesides and associated text). As a result, the self-assembled monolayer is transferred to the solid surface only where the stamp is touching the solid surface. This enables the creation of an engineered pattern of the self-assembled monolayer.

By contrast, the binding cavity of the present invention can not be described as a self-assembled monolayer as it has shapes and functionalities precisely formed at the molecular level (see step (c) of claim 1). The technique used in Whitesides is clearly different from that used in the present application. Standard soft lithography (as described in Whitesides) is prone to deformations and distortions that can be introduced due to the flexibility of the elastomeric stamp, leading to errors in the replicated pattern. Further, Whitesides neither teaches nor suggests selecting an appropriate solid substrate or functional group for facilitating attachment of the binding cavity on the solid support stamp to the solid substrate, as now recited in claim 1 (see step (d) of claim 1). In fact, Whitesides merely adds alkanethiol (see Figure 2) to the stamp as an “ink” to assist in transferring. Applicant respectfully submits that the person of skill in the art would not consider this “selecting an appropriate solid substrate or functional group for facilitating attachment of the binding cavity on the solid support stamp to the solid substrate”, since the choice of alkanethiol may not be appropriate for a given functional group on the binding cavity on the solid support stamp. Clearly, what the Applicant has done is invented a method of producing molecular imprinted polymers based on the particular properties of particular molecular targets. Neither Yilmaz nor Whitesides even suggest this particular feature. The method taught by Whitesides is limited to the resolution with which the stamp can be formed by lithographic or moulding methods. This is limited to one order of magnitude larger (10-20nm) than the molecular scale. This limitation means that Whitesides’ method can in no way be used to form binding cavities on a solid surface.

A person of ordinary skill in the art, when considering Yilmaz, would not be motivated to consider the teaching of Whitesides since Yilmaz provides no such motivation to do so.

The method taught by Whitesides is clearly different from the present invention and would be impractical in nature. The binding cavities as recited in the claims are three dimensional in nature and have chemical specificities, not just physical shapes.

In light of the above, Applicant respectfully submits that claims 1 to 5 and 30 to 45 would not have been obvious having regard to Yilmaz in view of Whitesides. Withdrawal of the rejection is respectfully requested.

The Examiner rejected claim 6 under 35 U.S.C. 103(a) as being unpatentable over Yilmaz in view of Whitesides and Bolshakova et al. (Ultramicroscopy, Volume 86, Issues 1-2, January 2001, Pages 121-128). The Examiner stated that Yilmaz does not disclose treating the support with aminosiloxane: "However, the use of aminosilanes has become a common technique for covalent linkage of biomolecules to glass in biosensor and DNA chip fabrication". The Examiner further stated that "it would have been obvious to one of ordinary skill in the art...to have treated the solid supports with aminosiloxane, in the modified method of Yilmaz, in order to facilitate immobilization of the template molecules". Applicant respectfully requests the Examiner to reconsider this rejection in light of the above arguments. Applicant reiterates that neither Yilmaz nor Bolshakova teach nor suggest a method of producing a molecularly-imprinted chemical detection device, a method of producing a solid support stamp or a device, in accordance with the present claims. Even if one were to consider silanization of glass with aminosilanes in accordance with Bolshakova, the person of ordinary skill in the art would still not arrive at the present invention. The purpose of aminosiloxane facilitates immobilization of the binding cavity which has unique specificity for the target of interest. None of the cited references, taken alone or in combination, provide such a teaching. Therefore, Applicant respectfully submits that the subject matter of claim 6 would not have been obvious having regard to Yilmaz in view of Whitesides and/or Bolshakova. Withdrawal of this rejection is respectfully requested.

Entry of the amendments is respectfully requested.

No fee is believed due for this submission. However, Applicant authorizes the Commissioner to debit any required fee from Deposit Account No. 501593, in the name of Borden Ladner Gervais LLP. The Commissioner is further authorized to debit any additional amount required, and to credit any overpayment to the above-noted deposit account.

Respectfully submitted,

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